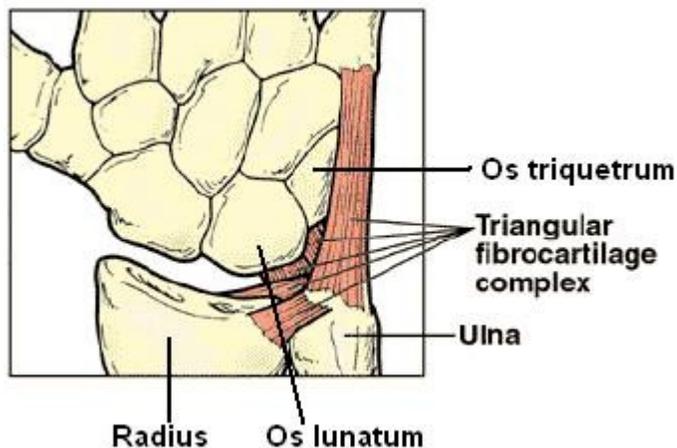


Triangular fibrocartilage



Triangular fibrocartilage discus

The TFC is an articular discus that lies on the pole of the distal [ulna](#). It has a triangular shape and a biconcave body; the periphery is thicker than its center. The central portion of the TFC is thin and consists of chondroid fibrocartilage; this type of tissue is often seen in structures that can bear compressive loads. This central area is often so thin that it is translucent and in some cases it is even absent.^[1] The peripheral portion of the TFC is well vascularised, while the central portion has no bloodsupply. This discus is attached by thick tissue to the base of the ulnar styloid and by thinner tissue to the edge of the [radius](#) just proximal to the radiocarpal articular surface.^[2]

Pathophysiology

The TFCC has a substantial risk for injury and degeneration because of its anatomic complexity and multiple functions.

Application of an extension-pronation force to an axial-load wrist, such as in a fall on an outstretched hand, causes most of the traumatic injuries of the TFCC. Dorsal rotation injury, such as when a drill binds and rotates the wrist instead of the bit, can also cause traumatic injuries. Injury may also occur from a distraction force applied to the volar forearm or wrist. Finally tears of the TFCC are frequently found by patients with distal radius fractures.^[1]

Perforations and defects in the TFCC are not all traumatic. There is an age related correlation with lesions in the TFCC, but many of these defects are asymptomatic. These lesions common occur by patients with positive ulnar variance

Symptoms

Patients with a TFCC injury usually experience pain or discomfort located at the ulnar side of the wrist, often just above the ulnar styloid. However there are also some patients who report diffuse pain throughout the entire wrist. Rest can reduce pain and activity can make it worse, especially with rotating movements (supination and pronation) of the wrist or movements of the hand sideways in ulnar direction. Other symptoms patients with a TFCC injury frequently mention are: swelling, loss of grip strength, instability and grinding or clicking sounds (crepitus) that can occur during activity of the wrist

The initial treatment for both traumatic and degenerative TFCC lesions, with a stable DRUJ, is conservative (nonsurgical) therapy. Patients may be advised to wear a temporarily splint or cast to immobilize the wrist and forearm for four to six weeks.^[21] The immobilization allows scar tissue to develop which can help heal the TFCC. In addition oral NSAID's and corticosteroid joint injections can be prescribed for pain relief. Physical therapy can help patients recover after immobilization or surgery.

Indications for acute TFCC surgery are: a clearly unstable DRUJ, or the existence of additional unstable or displaced fractures. TFCC surgery is also indicated when conservative treatment proves insufficient in about 8–12 weeks.

Fractures of the radius bone are often associated by TFCC damage. If the fracture is treated surgically it is recommended to evaluate and if necessary repair the TFCC as well.^[22] Closed fractures (where the skin is still intact) of the radius bone are treated non-surgically with cast; the immobilization can also help heal the TFCC.

Surgical treatment

Arthroscopic debridement of TFC discus tissue

The central part of the TFC has no blood supply and therefore has no healing capacity. When a tear occurs in this area of the TFC, it typically creates an unstable flab of tissue that is likely to catch on other joint surfaces. Removing the damaged tissue (debridement) is then indicated. Arthroscopic debridement as a treatment for degenerative TFC tears associated with positive ulnar variance, unfortunately, show poor results.^{[23][24]}

Arthroscopic repair of TFCC ligaments

Suturing TFCC ligaments can sometimes be performed arthroscopically. But only if there is no serious damage to the ligaments or other surrounding structures. Even after a short period of time torn ligaments tend to retract and therefore lose length. Retracted ligament ends are impossible to suture together again and a reconstruction may be necessary.

Open surgical repair of the TFCC

Open surgery is usually required for degenerative or more complex TFCC injuries, or if additional damage to the wrist or forearm caused instability or displacement. It is a more invasive surgical technique compared to arthroscopic treatment, but the surgeon has better visibility and access to the TFCC.

Options for open surgery:

- Suturing of the RUL's this is, just like arthroscopic suturing of these ligaments, only possible when the damage is not too serious and if both ends of the ruptured ligament are not yet retracted.
- Anatomic reconstruction of the RUL's using a tendon graft (e.g. the palmaris longus). The tendon graft is tunnelled through drilled holes in the ulnar and radius bones. This procedure is indicated for DRUJ instability caused by an irreparable TFCC. [\[25\]\[26\]](#)
- Capsular or extensor retinaculum plication. This surgical technique aims to improve DRUJ stability by shortening the joint capsule or the extensor retinaculum. It is mostly used for minor DRUJ instability and is less invasive compared to a complete RUL reconstruction. [\[27\]\[28\]](#)
- Shortening of the ulnar bone. Patients with a positive ulnar variance are more susceptible to TFCC damage. Shortening the ulnar bone may help relieve the excess pressure to the TFCC and prevent further degeneration. [\[29\]](#)